WHAT IS CLAIMED IS:

1. A method of operating a data processing system to generate a three-dimensional model of a scene from a plurality of photographs of said scene, said method comprising the

5   steps of:

defining an interior space containing part of said scene, said interior space being divided into a plurality of interior voxels;

10   defining an exterior space surrounding said interior space, said exterior space being divided into a plurality of exterior voxels, at least two of said exterior voxels having different sizes, wherein said exterior voxels are chosen such that said exterior voxels do not overlay one another and there is no space between said exterior voxels in said exterior space and

15   examining each voxel in said interior and exterior spaces to determine if said voxel can be seen in at least two of said photographs, and if said voxel can be seen, determining whether said voxel is empty.

2. The method of Claim 1 wherein all of said interior voxels have the same size.

20   3. The method of Claim 1 wherein the size of said exterior voxels increases as a function of the distance between said exterior voxels and said interior space.

4. The method of Claim 1 wherein one of said exterior voxels extends to infinity.

25   5. The method of Claim 1 wherein a viewing location from which said scene is to be viewed is defined and wherein said exterior voxels are chosen such that said exterior voxels subtend a solid angle at said viewing location that is less than 10 times that subtended by said interior voxels at said viewing location.

30   6. The method of Claim 1 wherein said exterior voxels are organized into a plurality of ordered shells, S_i, for i=1 to N, each shell having an inner surface and an outer surface and

having a plurality of exterior voxels therein, shell S_1 having said inner surface in contact with said interior region space, said inner surface of shell S_k being in contact with said outer surface of shell S_{k-1} for k=2 to N, said exterior voxels in shell S_k having larger volumes than said exterior voxels in shell S_{k-1} for k=2 to N.

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7. The method of Claim 6 wherein said voxels in shell S_N have an outer boundary that contains all of said three-dimensional scene.

8. The method of Claim 7 wherein said outer boundary of shell S_N is at infinity.

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